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# Alpha Electricity

## Introduction

Your goal at Alpha Electricity is really, really simple. You want to maximize profits. You don't care about climate or sea level or future generations or anything else. All you want to do is make as much money this year as you possibly can. On the way to achieving that goal, you want to spend as little as possible on emissions abatement.

## Data on Emissions and Costs of Abatement

If the confounded government would just leave you alone, you would maximize your profit while emitting 15 million tons of CO<sub>2</sub>. If you must, you can reduce emissions through costly measures. The marginal and total profit you earn is listed below.

CO <sub>2</sub> Emissions (Millions of Tons)	Marginal Profit (Millions)	Total Profit (Millions)
0	—	0
1	84	84
2	78	162
3	72	234
4	66	300
5	60	360
6	54	414
7	48	462
8	42	504
9	36	540
10	30	570
11	24	594
12	18	612
13	12	624
14	6	630
15	0	630

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## Worksheet

This worksheet is to help you keep track of what you did in the lab. You do not need to turn it in.

These are questions to fill out after the EPA has issued its three regulations (command-and-control, cap-and-trade, and emissions taxes)

1. Under command-and-control:

- How much CO<sub>2</sub> did you emit?
  
- What was your total profit?
  
- How much less was this than your profit at 15 million tons of emission? This is your total cost of cutting emissions.

2. Under the cap-and-trade program:

- (a) How many permits did you receive from the EPA?
  
- (b) What would your total profit have been if you did not buy or sell any permits?
  
- (c) Did you trade with Beta? If so, did you buy or sell permits?
  
- (d) How many permits?
  
- (e) What was the price?
  
- (f) What was your final emission? How big a cut was this from your original 15 million tons?
  
- (g) What was your total net profit (profit minus the cost of buying permits plus the income from selling permits)?

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(h) Did you come out better or worse than if you had not traded permits?

(i) Did you come out better or worse than under command-and-control?

3. Under the emissions-tax program:

(a) How many tons of CO<sub>2</sub> did you emit? How big a cut was this from your original 15 million tons?

(b) What were your total net profits (total profit minus total emissions tax)?

(c) Did you come out better or worse than under command-and-control?

(d) Did you come out better or worse than under cap-and-trade?